

1. THE APPLICANT IS SUBMITTING FOR TWO SEPARATE PROJECTS AND CONSTRUCTION PERMITS, AND EACH ONE CONSISTS OF REPLACING A SINGLE EXISTING POLE AND HPS LUMINAIRE WITH A NEW POLE AND LED LUMINAIRE. IN ADDITION, BOTH THE CITY OF SCOTTSDALE AND THE TOWN OF PARADISE VALLEY HAVE ALSO REQUESTED THAT THE EXISTING HPS LUMINAIRE AND MOUNTING ARM/BRACKET LOCATED IN-BETWEEN THE TWO PROJECT LUMINAIRES ALSO BE REPLACED AS PART OF EITHER PROJECT. THEREFORE, IN ORDER TO PROVIDE A MORE ACCURATE EVALUATION THAT INCLUDES THE OVERLAPPING ILLUMINANCE EFFECTS FROM ADJACENT LUMINAIRES, THE PHOTOMETRIC STUDIES FOR ALL THREE LUMINAIRES HAVE BEEN COMBINED INTO A SINGLE COMPREHENSIVE STUDY. THIS SAME COMPREHENSIVE STUDY WILL BE SUBMITTED AS PART OF EACH OF THE TWO PROJECT/PERMIT SUBMITTALS.
2. THE ANALYZED ROADWAY HAS 3-4 LANES OF TRAVEL IN EACH DIRECTION (INCLUDING INTERMITTENT TURN AND DECELERATION LANES). IN ADDITION, IESNA RP-8 RECOMMENDED PRACTICE SPECIFIES THAT THERE ARE TO BE TWO ROWS OF CALCULATION POINTS PER LANE, AND THAT THESE ROWS OF POINTS ARE TO EACH BE LOCATED 1/4 OF THE LANE WIDTH IN FROM EACH EDGE OF THE LANE. AS A RESULT, THERE ARE 6-8 ROWS OF CALCULATION POINTS INCLUDED IN THE ANALYSIS.
3. THE GRAPHICAL TEMPLATES INCLUDED IN THE STUDY ARE PROVIDED AS A COURTESY SO THAT IT IS EASIER TO VISUALIZE THE PATTERN OF THE ILLUMINATION BEING PROVIDED BY EACH LUMINAIRE. THE TEMPLATE BOUNDARIES IDENTIFY THE LOCATIONS AT WHICH THE ILLUMINANCE VALUES ON THE ROADWAY SURFACE GRADUALLY REDUCE TO A VALUE OF 0.25 FOOTCANDLES.
4. THE MOUNTING HEIGHTS LISTED ARE FROM THE LUMINAIRE TO THE ROADWAY SURFACE, AND THEREFORE INCLUDE THE ~6" HEIGHT OF THE CURB.

MAINTAINED ILLUMINANCE PHOTOMETRIC CALCULATION SUMMARY (MF = 0.72)

Symbol	Qty	Description and Catalog #	Rettage	Lumens	NF
HPS 	7	EXISTING 250-WATT GE CGBM-HEAD HPS 220XK LUMINAIRE ON AN EXISTING ARM & POLE. CAN A WCP-15-A-5-0-3-0-3-MCS HPS LUMINAIRE WITH CURVED OPTICS. THE EXISTING LUMINAIRE AND POLE ARE NOT PART OF THIS PROJECT AND ARE TO REMAIN. THE LUMINAIRE IS MOUNTED ON A 20" x 6" ARM, WITH THE LUMINOUS OPENING LOCATED AT ~33.1".	250	29,000	0.72

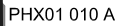


1. **RESPONSE TO REVIEW COMMENT #7A:**
THE 2-3-20 & NEW SUBMITTAL SHOW THE #08 & #10 POLES IN THE CORRECT LOCATIONS. THEY WERE ERRONEOUSLY REVERSED IN THE NOV 2019 SUBMITTAL.

2. **RESPONSE TO REVIEW COMMENT #7B:**
LOCAL STREET LIGHTING IS MOST OFTEN BASED UPON THE INFO CONTAINED IN THE DOCUMENT TITLED: RECOMMENDED PRACTICE FOR DESIGN AND MAINTENANCE OF ROADWAY & PARKING FACILITY LIGHTING (RP-8-18), WHICH IS PREPARED BY THE ILLUMINATING ENGINEERING SOCIETY (IES) AND THEN ADOPTED BY ANSI AS AN APPROVED NATIONAL STANDARD. SECTION #3.2.3.1.1 DESCRIBES THE PREFERRED LOCATIONS FOR CALC POINTS, AND INCLUDES FIGURE 3-6, WHICH SHOWS THAT THE PREFERRED LOCATIONS ARE ONLY FROM ONE LUMINAIRE TO THE NEXT LUMINAIRE ON THE SAME SIDE OF THE ROAD. THIS IS REFERRED TO AS "ONE LUMINAIRE CYCLE."
3. **RESPONSE TO REVIEW COMMENT #8A:**
THE STATEMENT IN THE REVIEW COMMENT IS CORRECT -- THE PROPOSED DESIGN DOES NOT MEET CURRENT COS STANDARDS. HOWEVER, UPON SHOWING THE COS SEVERAL DESIGN VERSIONS UTILIZING DIFFERENT LUMINAIRE WATTAGES AND DISTRIBUTIONS, IT WAS AGREED THAT IT WAS SIMPLY IMPOSSIBLE TO MEET THE CURRENT STANDARDS UTILIZING THE MANDATED NEW MOUNTING HEIGHT AND EXISTING POLE SPACING. THE CITY AGREED TO ADDRESS THE EXCESSIVE POLE SPACING AT A FUTURE DATE, AND AGREED TO ALLOW OUR PROPOSED DESIGN SOLUTION.
4. **RESPONSE TO REVIEW COMMENT #8B:**
THE PROPOSED DESIGN IS BASED UPON A LUMINAIRE WITH A TYPE-IIW DISTRIBUTION, A COLOR TEMP OF 3000K, AND AN INITIAL OUTPUT OF 13,400 LUMENS. THIS IS INDEED ALL DIFFERENT FROM THE SPECS CONTAINED WITHIN COS' CURRENT STANDARDS, BUT WERE APPROVED BY THE COS TRAFFIC ENGINEER DUE TO THE CONSTRAINTS IMPOSED BY THE EXISTING POLE LOCATIONS/SPACING AND MANDATED NEW LUMINAIRE MOUNTING HEIGHT. OUR PROPOSED DESIGN WAS DEEMED TO BE THE BEST APPROACH/COMPROMISE FOR THE PARTICULAR LOCATION.

MAINTAINED ILLUMINANCE PHOTOMETRIC CALCULATION SUMMARY (MF = 0.72 - 0.85)

Symbol	Qty	Description and Catalog #	Luminaire Schedule	Wattage	Lumens	MF
A	2	NEW 12'-0"HT TYPE-TW GE EVOLV LED 300K LUMINAIRE & ARM MOUNTED ON A NEW POLE. CAT # E90-0-0-14-93-0-0-ARM TYPE-TW (WIDE) LED LUMINAIRE WITH FULL-CUTOFF OPTICS. THIS NEW LUMINAIRE AND 3" X 8" ARM ARE TO BE RETROFIT ONTO THE EXISTING 35'-0"HT GE OVERHEAD BPS 2200K LUMINAIRE ON AN EXISTING ARM & POLE. THE LUMINAIRE IS TO BE MOUNTED ON A NEW 3" X 8" ARM, WITH THE LUMINOUS OPENING TO BE LOCATED AT -39'-6" ABOVE THE ROADWAY SURFACE.	122	122	13,400	0.85
A2	1	NEW 12'-0"HT TYPE-TW GE EVOLV LED 300K LUMINAIRE & ARM MOUNTED ON EXISTING POLE. CAT # E90-0-0-14-93-0-0-ARM TYPE-TW (WIDE) LED LUMINAIRE WITH FULL-CUTOFF OPTICS. THIS NEW LUMINAIRE AND 3" X 8" ARM ARE TO BE RETROFIT ONTO THE EXISTING 35'-0"HT GE OVERHEAD BPS 2200K LUMINAIRE ON AN EXISTING ARM & POLE. THE LUMINOUS OPENING IS TO BE LOCATED AT -34'-0" ABOVE THE ROADWAY SURFACE.	122	122	13,400	0.85
HPS	4	EXISTING 35'-0"HT GE OVERHEAD BPS 2200K LUMINAIRE ON AN EXISTING ARM & POLE. CAT # H01-0-0-5-0-0-2-0-2-W03 HPS LUMINAIRE WITH CUTOFF OPTICS. THIS EXISTING LUMINAIRE AND POLE ARE NOT PART OF THIS PROJECT AND ARE TO REMAIN. THE LUMINAIRE IS MOUNTED ON A 20" X 6" ARM, WITH THE LUMINOUS OPENING LOCATED AT -33'-0" ABOVE THE ROADWAY SURFACE.	250		29,000	0.72



TYPE A
EXISTING POLE,
LUMINAIRE &
MOUNTING ARM
TO BE REPLACED
WITH NEW
RELOCATED POLE,
LED LUMINAIRE &
8' MOUNTING ARM.

TYPE A2
EXISTING POLE
TO REMAIN AND
BE RETROFIT
WITH NEW LED
LUMINAIRE &
8' MOUNTING ARM.

PHX01 008 A

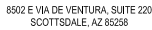
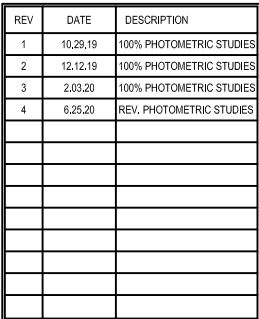
TYPE A
EXISTING POLE,
LUMINAIRE &
MOUNTING ARM
TO BE REPLACED
WITH NEW
RELOCATED POLE,
LED LUMINAIRE &
8' MOUNTING ARM.



THE INFORMATION CONTAINED IN THIS SET OF DRAWINGS
IS PROPRIETARY AND CONFIDENTIAL TO AT&T WIRELESS

ANY USE OR DISCLOSURE OTHER THAN AS IT RELATES
TO AT&T WIRELESS IS STRICTLY PROHIBITED

PLANS PREPARED FOR:

PLANS
PREPARED BY:

DRAWN BY:	DAH
CHECKED BY:	DAH

LINCENSURE NO

SITE NAME & ADDRESS:

AT&T SITE ID:
CRAN_RANM:
PHX01_008_A
401 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

SHEET TITLE:

PHOTOMETRIC STUDIES

SHEET NO:

SL-1

GE Evolve®

LED Roadway Lighting

ERL1-ERLH-ERL2



Project name _____

Date _____

Type _____

Typical Specifications: ERL1-ERLH-ERL2

LED & Optical

- **Output Range:** 1900 – 30000 lm
- **Photometric Options:** Type II Narrow, Type II Wide, Type III, Type IV
- **System Efficacy:** 100 – 145 LPW
- **CCT:** 2700K, 3000K, 4000K; LEDs @ 70 CRI

Lumen Maintenance Tables

Projected Lxx per IES TM-21 at 25°C for reference:

ERL1 LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	60,000 HR
02,03,04,05,06	L96	L95	L94
07,08,09	L95	L91	L89
10	L89	L80	L76

ERLH LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	60,000 HR
10, 11	L97	L96	L96
13, 14	L95	L93	L92
15, 16	L94	L91	L91

ERL2 LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	60,000 HR
16, 18, 19, 21, 23	L96	L94	L95
25, 27, 28	L95	L93	L92
30	L94	L91	L90

Note: Projected Lxx based on LM80 (10,000 hour testing). Accepted industry tolerances apply to initial luminous flux and lumen maintenance measurements.

Electrical

- **Input Voltage:** 120-277 volt and 347-480 volt
- **Input Frequency:** 50/60Hz
- **Power Factor (PF)*:** >90%
- **Total Harmonic Distortion (THD)*:** <20%

*Power factor and THD tolerance exceptions: ERL1 "02" Lumen output: PF and THD within tolerances above only at 120 volt. ERL1 "03" Lumen output: @120 volt PF~0.89; @ 480 volt THD~26% ERL1 "04" Lumen output: @480 volt THD~22%

Ratings

- **Surge Protection:** per ANSI C136.2-2015: (Driver Internal):
 - 6kV/3kA "Basic: (120 Strikes)" - Standard on ERL1 (02-06)
 - 10kV/5kA "Enhanced: (40 Strikes)" - Standard on ERL1 (07 - 10), ERLH, ERL2
- **(Additional Separate Secondary SPD)**
 - 10kV/5kA "Enhanced: (40 Strikes)" - Option "R"
 - 20kV/10kA "Elevated" (40 Strikes) - Option "T"
- **Safety:** UL/cUL Listed. UL 1598 listed, suitable for wet locations (UL) (UL)
- **Environmental:** Compliant with the materials restrictions of RoHS
- **EMI:** Title 47 CFR Part 15 Class A
- **Vibration:** 3G per ANSI C136.31-2010
- LM-79 testing in accordance with IESNA Standards
- Std. Optical enclosure rated per ANSI C136.25-2009:
 - ERL1/ERLH/ERL2 = IP65, Optional: IP66

Operating Temperature:

PRODUCT ID	LUMEN OUTPUT	AMBIENT READING
ERL1	02-10	-40°C to 50°C
ERLH	10-11, 13	-40°C to 50°C
ERLH	14-16	-40°C to 45°C
ERL2	16-28	-40°C to 50°C
ERL2	30	-40°C to 45°C

Delayed start may be experienced < -35°C

Construction & Finish

- **Housing:**
 - Die Cast Enclosure
 - Casting-integral heat sink for maximum heat transfer
- **Lensing:** Impact resistant tempered glass, standard
- **Paint:** Corrosion resistant polyester powder painted, minimum 2.0 mil. thickness.
 - Standard Colors: Dark Bronze, Black, & Gray
 - RAL & custom colors available
 - Optional coastal finish available.
- **Weight:** 12.4lbs (5.6kg) – 24lbs (10.9kg)

Warranty

- **System Warranty:** 5 Year Standard, 10 Year Optional

Controls

- **Dimming:**
 - Standard: 0-10V; Optional: DALI (120-277V Only)
- **Sensors:**
 - Photo electric sensors (PE) available.
- LightGrid™ compatible

Mounting

- Slipfitter with +/- 5 degree of adjustment for leveling.
- Integral die cast mounting pipe stop.
- Adjustable for 1.25 in. or 2 in. mounting pipe.

Suggested HID Replacement Lumen Levels

- ~4,000–5,000 lumens to replace 100W HPS Cobra-head
- ~7,000–8,800 lumens to replace 150W HPS Cobra-head
- ~8,500–11,500 lumens to replace 200W HPS Cobra-head
- ~11,500–14,000 lumens to replace 250W HPS Cobra-head
- ~21,000–30,000 lumens to replace 400W HPS Cobra-head

Note: Actual replacement lumens may vary based upon mounting height, pole spacing, design criteria, etc.

PREVIOUS	DESCRIPTION	CURRENT	DESCRIPTION
A1, B1	Extra Narrow/Narrow Asymmetric	A3	Type II Narrow
C1, E1	Asymmetric Short/Medium	B3	Type II Wide
D1, G1	Asymmetric Forward/Extra Wide	C3	Type III
F1	Asymmetric Wide	D3	Type IV
		E3	Type II Enhanced Back Light

**The information above is designed to provide a guideline to select the correct luminaire for a roadway application. The best and most accurate way to ensure the proper design is do a lighting layout Utilizing AGI.



International Dark Sky Association listed. 2700K or 3000K must be selected to meet IDA certification and approval.

GE Evolve®

LED Roadway Lighting

ERL1-ERLH-ERL2



Project name _____

Date _____

Type _____

ERLH

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION*	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve R = Roadway L = Local H = High Output	0 = 120-277V* 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 D = 347 H = 347-480*#	10 11 13 14 15 16 See Table	A3 = Type II Narrow B3 = Type II Wide C3 = Type III D3 = Type IV E3 = Type II Enhanced Back Light See Table *Nominal IES Type classing subject to typical variation, individual units may differ.	27 = 2700K< 30 = 3000K< 40 = 4000K < Select 2700K or 3000K CCT for IES approved units.	A = ANSI C136.41 7-pin D = ANSI C136.41 7-pin with Shorting Cap E = ANSI C136.41 7-pin with non-Dimming PE Control.* *PE Control Only available for 120-277V or 480V Discrete. Not available for 347-480V or 347V Discrete. NOTE: Dimming controls wired for 0-10V standard unless DALI option "U" requested.	GRAY = Gray BLCK = Black DKBZ = Dark Bronze	A = 4 Bolt Slipfitter † F = Fusing G = Internal Bubble Level I = IP66 Optical L = Tool-Less Entry R = Secondary 10kV/5kA SPD T = Secondary 20kV/10kA SPD U = DALI Programmable +^ V1 = Variable Output via Field Adjustable Module** X = Single Package # Y = Coastal Finish* XXX = Special Options † Contact manufacturer for Lead-Time. # "X" option provides single pack box per fixture. Std Packaging = 20 units per Magna pak container. * Recommended for installations within 750 ft. from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available in 347V, 480V or 347-480V. ** Not available with DALI (U) option.

LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS			TYPICAL SYSTEM WATTAGE		BUG RATING			IES FILE NUMBER		
		4000K	3000K	2700K	120-277V	347-480V	4000K	3000K	2700K	4000K	3000K	2700K
10	A3	10000	9600	9300	82		B2-U0-G2	B2-U0-G2	B2-U0-G2	ERLH_10A340 .IES	ERLH_10A330 .IES	ERLH_10A327 .IES
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERLH_10B340 .IES	ERLH_10B330 .IES	ERLH_10B327 .IES
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_10C340 .IES	ERLH_10C330 .IES	ERLH_10C327 .IES
	D3						B1-U0-G3	B1-U0-G3	B1-U0-G3	ERLH_10D340 .IES	ERLH_10D330 .IES	ERLH_10D327 .IES
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_10E340 .IES	ERLH_10E330 .IES	ERLH_10E327 .IES
11	A3	11500	11000	10700	98		B3-U0-G3	B2-U0-G2	B2-U0-G2	ERLH_11A340 .IES	ERLH_11A330 .IES	ERLH_11A327 .IES
	B3						B3-U0-G3	B2-U0-G2	B2-U0-G2	ERLH_11B340 .IES	ERLH_11B330 .IES	ERLH_11B327 .IES
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_11C340 .IES	ERLH_11C330 .IES	ERLH_11C327 .IES
	D3						B1-U0-G3	B1-U0-G2	B1-U0-G2	ERLH_11D340 .IES	ERLH_11D330 .IES	ERLH_11D327 .IES
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_11E340 .IES	ERLH_11E330 .IES	ERLH_11E327 .IES
13	A3	13000	12500	12100	111		B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_13A340 .IES	ERLH_13A330 .IES	ERLH_13A327 .IES
	B3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_13B340 .IES	ERLH_13B330 .IES	ERLH_13B327 .IES
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_13C340 .IES	ERLH_13C330 .IES	ERLH_13C327 .IES
	D3						B2-U0-G3	B2-U0-G3	B1-U0-G3	ERLH_13D340 .IES	ERLH_13D330 .IES	ERLH_13D327 .IES
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_13E340 .IES	ERLH_13E330 .IES	ERLH_13E327 .IES
14	A3	14000	13400	13000	122		B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_14A340 .IES	ERLH_14A330 .IES	ERLH_14A327 .IES
	B3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_14B340 .IES	ERLH_14B330 .IES	ERLH_14B327 .IES
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_14C340 .IES	ERLH_14C330 .IES	ERLH_14C327 .IES
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_14D340 .IES	ERLH_14D330 .IES	ERLH_14D327 .IES
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_14E340 .IES	ERLH_14E330 .IES	ERLH_14E327 .IES
15	A3	15000	14400	13900	136		B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_15A340 .IES	ERLH_15A330 .IES	ERLH_15A327 .IES
	B3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_15B340 .IES	ERLH_15B330 .IES	ERLH_15B327 .IES
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_15C340 .IES	ERLH_15C330 .IES	ERLH_15C327 .IES
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_15D340 .IES	ERLH_15D330 .IES	ERLH_15D327 .IES
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_15E340 .IES	ERLH_15E330 .IES	ERLH_15E327 .IES
16	A3	16000	15300	14900	149		B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_16A340 .IES	ERLH_16A330 .IES	ERLH_16A327 .IES
	B3						B3-U0-G3	B3-U0-G3	B2-U0-G3	ERLH_16B340 .IES	ERLH_16B330 .IES	ERLH_16B327 .IES
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_16C340 .IES	ERLH_16C330 .IES	ERLH_16C327 .IES
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3	ERLH_16D340 .IES	ERLH_16D330 .IES	ERLH_16D327 .IES
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3	ERLH_16E340 .IES	ERLH_16E330 .IES	ERLH_16E327 .IES

TYPE IIW (wide)

Photometrics: Evolve® LED Streetlight (ERLH)

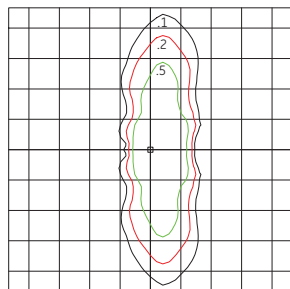
ERLH

Type II Narrow
(13A340)

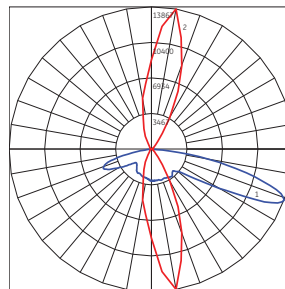
13,000 Lumens

4000K

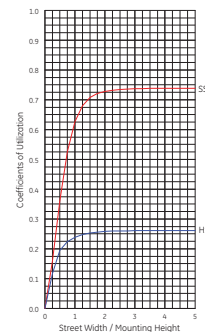
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Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 80°
— Horizontal cone through vertical angle of Max. Cd at 69°



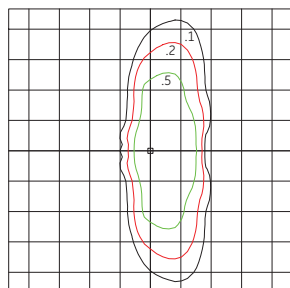
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Type II Wide
(13B340)

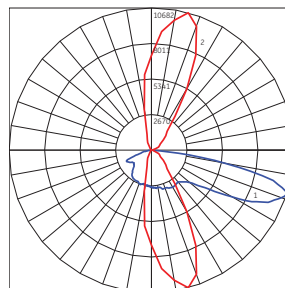
13,000 Lumens

4000K

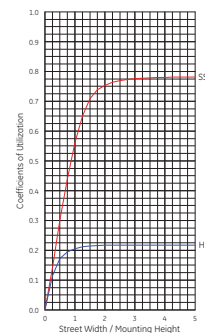
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Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 72°



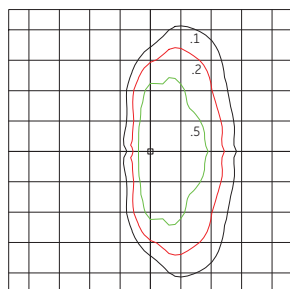
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Type III
(13C340)

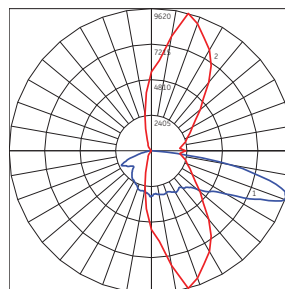
13,000 Lumens

4000K

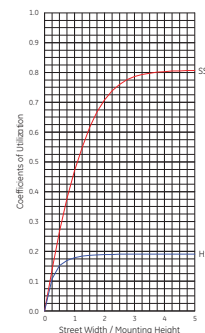
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Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 71°



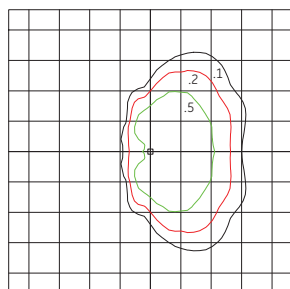
ERLH

Type IV
13D340

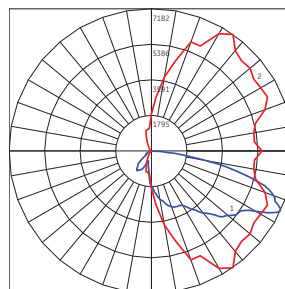
13,000 Lumens

4000K

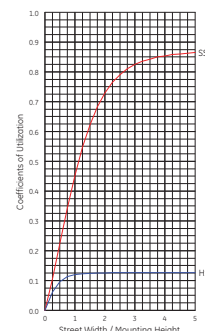
ERLH_13D340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 55°
— Horizontal cone through vertical angle of Max. Cd at 65°



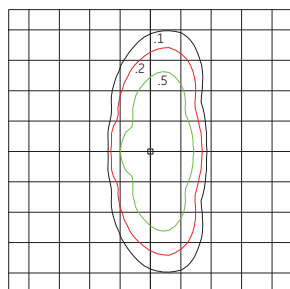
ERLH

Type II Enhanced Back Light
13E340

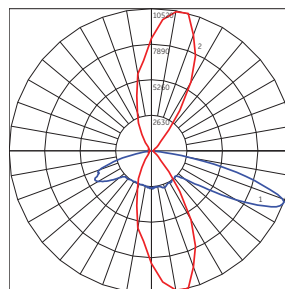
13,000 Lumens

4000K

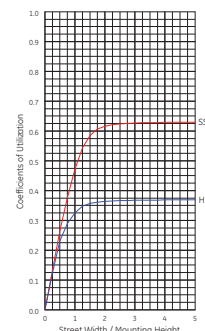
ERLH_13E340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 69°



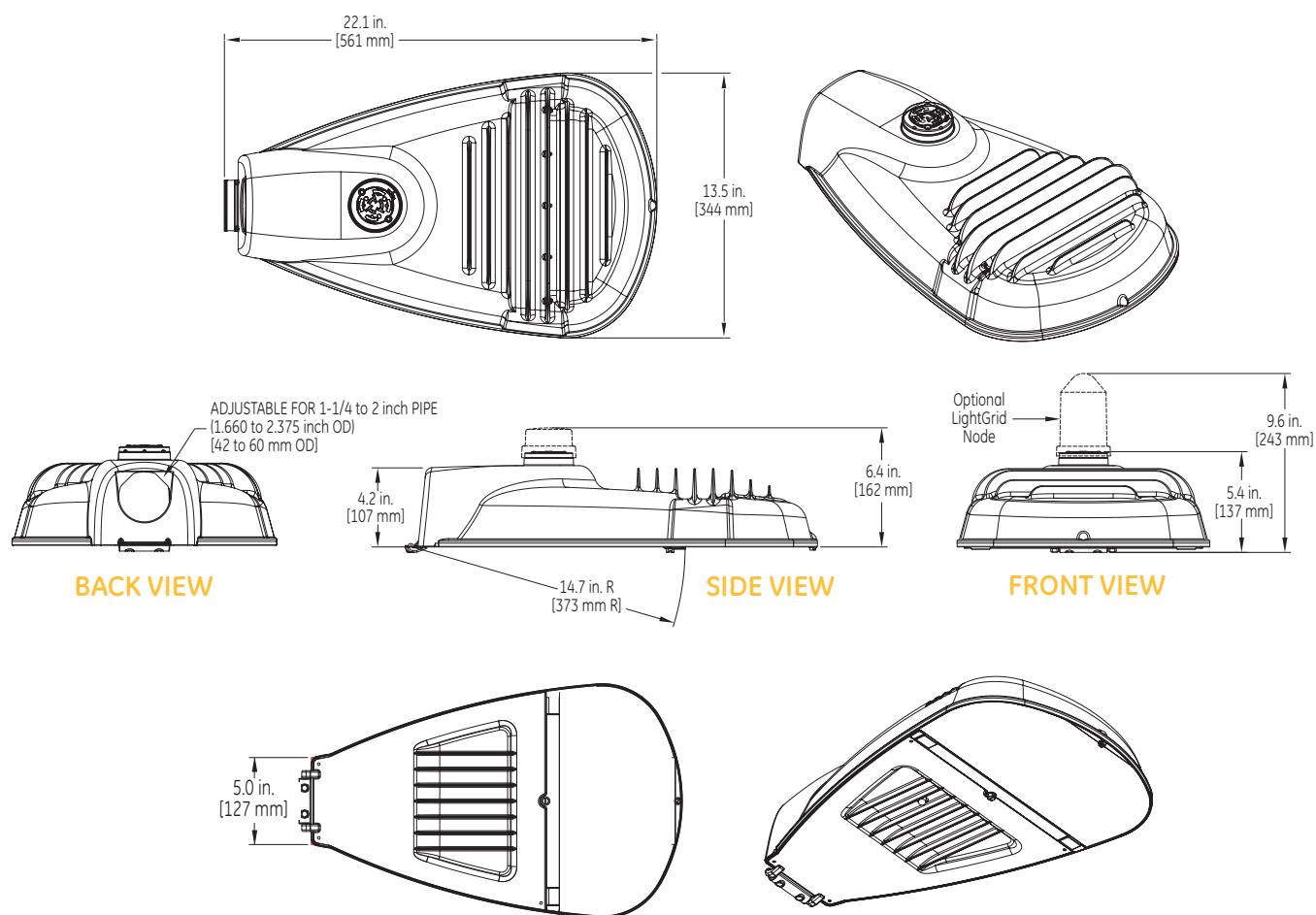
GE Evolve®

LED Roadway Lighting

ERL1-ERLH-ERL2

Product Dimensions:

Evolve® LED Streetlight (ERLH)



DATA

- Approximate net weight: 15.15 lbs (6.9 kgs) - 2 Bolt Slipfitter
- Approximate net weight: 15.85 lbs (7.2 kgs) - 4 Bolt Slipfitter
- Effective Projected Area (EPA): 0.5 sq ft max (0.046 sq m)

Twist-Lock Electronic Photocontrol LongLife II

Exclusive Features

ZCS TECHNOLOGY

Zero Cross Switching

Zero Cross Switching Technology: protects the device from inrush currents, commonly found in LED Luminaires.



Intelligent Microprocessor: assures advanced Performance & Reliability

Self-Healing Relay

SELF-Healing Relay: allows unattended field restoration. Stuck relay contacts are a common failure point. Our Patent Pending technology actually works to un-stick the contacts, thus preventing wasted energy (day burners) and service calls. Tested at more than 325 years with a 1000 Watt Tungsten Lamp



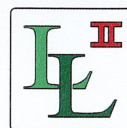
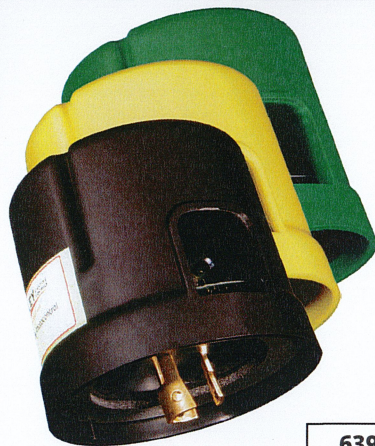
3 Tier Power Supply Circuitry: 640 Joule 33 mm MOV rated @ 40,000 Amps for primary protection Dual Zener Diode for secondary protection. 3rd Layer of protection using a precision voltage regulator.



Tru-Filter®: spectral sensitivity matches that of the Human Eye; while competitor's Silicon Photodetector comes nowhere close.

Phone: 803-939-4700
Fax: 803-939-4777
E-mail: Sales@RipleyLC.com

www.RipleyLC.com



Ripley's exclusive LongLife II Photocontrol

"NEW Generation of Technologies that change the Game"

Ripley Lighting Controls is pioneering new technologies raising the bar in the Street and Area Lighting Industry.



	6390LL-BK	6394LL	6395LL
Nominal Voltage 60 Hz	120/208/240/277	480	347
Voltage Range	105—305	432—528	312—382
Fail Mode	On		
Load Rating	1000 Watt Tungsten / 1800 VA Ballast		
Operating Temperature	-40C to +70C (-40F to +158F)		
Photocell	Infrared Filtering Silicon Phototransistor		
Dielectric Strength	5000 Volts between current carrying parts and metal surfaces		
Surge Protection	Primary: 640 Joule MOV rated at 40,000 amp surge current—protects not only the photocontrol, but also the LED fixture Secondary: 2 Zener diodes Third: Voltage Regulator		
Power Consumption	0.5 watts @ 120 V		
Time Delay Off (Instant On)	3 to 5 seconds		
Operating Light Levels (Standard Settings)	Turn On 1.5 FC ± .25 / Turn Off by 2.25 FC (Off:On Ratio = 1.5:1)		
ANSI Color Coded Cover: double-wall thickness, UV Stabilized Permanent Color LongLife polymer with extra UV inhibitor	Black	Yellow	Green
Options			
Fail Off	-FO (Green)	N/A	N/A
Frequency	60Hz		
Applicable with			

Other Exclusive Features:

- Electrolytic Capacitors rated 105 °C, with minimum 20,000 hour life at maximum voltage, current, & temperature
- Completed circuit boards are conformal coated with silicone for Long Life
- Double-wall thickness for strength and longevity in constant outdoor environment, optimized black Long Life polymer with maximum UV inhibitor
- 1:1 Ratio Capable saves energy by reducing burn time. Allows for the light to turn off at the same light level as the turn on value.
- RoHS Compliant & packaged in Biodegradable Bags
- WARRANTY: 12 years from date of manufacture

Meets or exceeds rigid quality requirements of SouthConn Technologies Inc. and applicable ANSI C136.10, and C136.24 and C136.41



From: [REDACTED]
To: [REDACTED]
Subject: RE: PHX01_008_A and PHX01_010_A - Paradise Valley Site
Date: Tuesday, August 18, 2020 8:15:33 AM
Attachments: [REDACTED]

Teresa,

Yes, I am okay with Don's proposal.

Thank you,

Hong Huo, PE
Traffic Engineer Principal

Traffic Management Center
City of Scottsdale
9191 E San Salvador Dr
Scottsdale, AZ 85258
Phone: (480) 312-7935
Fax: (480) 312-5505

From: Terese LoPresti [REDACTED]
Sent: Monday, August 17, 2020 2:24 PM
To: Huo, Hong [REDACTED]; Niederer, Keith [REDACTED]
Subject: RE: PHX01_008_A and PHX01_010_A - Paradise Valley Site

⚠ External Email: Please use caution if opening links or attachments!

Hi Hong,

I sent the below email trail below to Paradise Valley along with Don's photometric study. Please see Paradise Valley's response below which I received on Friday. Are you okay with the lighting levels as proposed by Don? Let me know if you need anything from me.

2. **Luminaire Data.** Per the April 20th review letter, the Town Engineering Department requested that the average lighting levels do not appear to meet City of Scottsdale's requirements. An email from the City of Scottsdale identifying agreement with your lighting engineer was provided to the Town. However, a more detailed response is needed from the City of Scottsdale which specifically confirms that the city is ok with the proposed lighting levels. If you have any questions, please contact Town Engineer Paul Mood at 480-348-3573.

Thank you,
Terese LoPresti
Project Manager
Smartlink
terese.lopresti@smartlinkgroup.com
[REDACTED]

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From: Huo, Hong [REDACTED]
Sent: Friday, June 12, 2020 1:52 PM
To: Terese LoPresti [REDACTED]; Niederer, Keith [REDACTED]
Subject: RE: PHX01_008

Terese,

Thanks for the information. I concur with Don's statement. The plan looks good.

Thank you,

Hong Huo, PE, PTOE
Traffic Engineer Principal

Traffic Management Center

City of Scottsdale
9191 E San Salvador Dr
Scottsdale, AZ 85258
Phone: (480) 312-7935
Fax: (480) 312-5505

From: Terese LoPresti [REDACTED]
Sent: Friday, June 12, 2020 11:21 AM
To: Huo, Hong [REDACTED]; Niederer, Keith [REDACTED]
Subject: RE: PHX01_008

⚠ External Email: Please use caution if opening links or attachments!

Hi Hong,

Thank you. Here is the photometric study. This includes both PHX01_008 and PHX010. We submitted the photometric study along with the luminaire type and the photocell cut sheets.

Thank you,
Terese LoPresti
Project Manager
[Smartlink](#)
[REDACTED]

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From: Huo, Hong [REDACTED]
Sent: Friday, June 12, 2020 11:01 AM
To: Terese LoPresti [REDACTED]; Niederer, Keith [REDACTED]
Subject: RE: PHX01_008

Terese,

It has been a while since our last conversation with Don. Could you send me the revision so that it may remind me some details?

Thank you,

Hong Huo, PE, PTOE
Traffic Engineer Principal

Traffic Management Center
City of Scottsdale
9191 E San Salvador Dr
Scottsdale, AZ 85258
Phone: (480) 312-7935
Fax: (480) 312-5505

From: Terese LoPresti [REDACTED]
Sent: Friday, June 12, 2020 9:50 AM
To: Niederer, Keith [REDACTED]; Huo, Hong [REDACTED]
Subject: FW: PHX01_008

⚠ External Email: Please use caution if opening links or attachments!

Hi,

We have received comments back from Paradise Valley for AT&T site PHX01_008. Don Happ has responded so that we may include in our resubmittal. I wanted to reach out to you before resubmitting to make sure Scottsdale is in agreement with Don's response.

Please let me know if you have any questions.

Thank you,
Terese LoPresti
Project Manager
[Smartlink](#)
[REDACTED]

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From: Don Happ [REDACTED]
Sent: Tuesday, May 5, 2020 11:46 PM
To: Terese LoPresti [REDACTED]; Michael O'Grady [REDACTED]
Subject: RE: PHX01_008

Terese,

Here are my proposed responses for PHX01_008. Please feel free to word-smith the text as you feel appropriate:

7.

- a. Sheet SL-1 dated 2-3-20 has the #008 & #010 poles in the correct locations. They were erroneously reversed in the November submittal.
- b. Local street lighting is most often based upon the information contained within the "Recommended Practice #8 (RP-8) document, which is prepared by the Illuminating Engineering Society and then adopted by ANSI as an approved national standard. The "Calculations and Measurement Parameters" section in this document includes a sub-section that deals with the location of calculation (test) points, which are intended to cover the distance from one luminaire to the next luminaire on the same side of the roadway (and to include if any, the contribution from any luminaires on the opposite side of the roadway that are located within this distance). This distance/area is referred to as "One Luminaire Cycle".

The use of One Luminaire Cycle as defined by the IES was discussed with, and approved by, CoS Traffic Engineer Huo. We will update the drawing sheet to reference the RP-8 document.

8.

- a. The statement included in the Comment is correct – the proposed design does not meet current CoS standards. We met with CoS Traffic Engineer Huo, and showed her multiple photometric studies based upon different mounting heights and optical/photometric distributions, and she came to accept that it was physically impossible to achieve the current City standards using the existing pole spacing and the mandated mounting heights. We also showed her that the optional Type-IIW (wide) luminaire produced the best coverage pattern for this particular project, and she approved its use for this project even though the photometric distribution was different from the Type-III luminaire included in the current CoS standards. We will update the drawing sheet to include mention of this verbal approval.
- b. The proposed design is based upon a luminaire with a Type-IIW distribution, a color temperature of 3000K, and an initial lumen output of 13,400. This is all different from the specifications contained within CoS' current standards, but were approved by CoS Traffic Engineer Huo during that same meeting that is referenced in Response 8b. Some of the concerns discussed were: increasing luminaire wattage and the associated energy consumption, that the installation of a higher wattage luminaire could create future maintenance issues, and that it was simply unfair to hold an applicant responsible for having to correct the City's earlier decision to locate the existing poles too far apart. Therefore, the luminaire specifications included in the recent submittal were approved by CoS Traffic Engineer Huo. We will update the drawing sheet to include mention of this verbal approval.

I suggest that we meet with the ToPV Planner to discuss these proposed responses, and will provide these services at no charge. I am headed out of town until late Thursday, but am available anytime afterward.

Regards,

Don Happ
President LC, CEM, LEED-AP

D.H. Lighting Solutions

[REDACTED]
[REDACTED]
[REDACTED]

From: Terese LoPresti [REDACTED]
Sent: Tuesday, May 05, 2020 3:23 PM
To: Don Happ [REDACTED]; Michael O'Grady [REDACTED]
Subject: PHX01_008 & PHX01_010

Hi Don,

We have comments back from Paradise Valley on the photometric study. Here are the comments that pertain to the photometric study. Let me know your thoughts.

With regard to comment # 7. What you provided to us and what we submitted are correct. The previous draft version had the two flipped. You corrected on the final. We should be able to address but if you want to send an explanation note, that may be helpful with the town.

7. Sheet SL-1:

- a. Please verify the location of Street Light 008-A. The November pre-application submittal showed Street Light 008-A located on the north part of the plan.

However, this submittal shows Street Light 008-A located on the south part of the plan.

- b. Per previous discussion, it was noted that the light output on the streetlight photometric plan is shown between the light poles in accordance with industry standards. Please note this on the plan and reference any applicable standards documenting this practice.

With regard to comment #8. Do you have any back up documentation based on our meetings with the City of Scottsdale? I think you had additional correspondence with Hong after our meeting. As you know, Scottsdale cannot meet their own standards.

documenting this practice.

8. Luminaire Data. Below are the Engineering Department comments which utilized the City of Scottsdale standards:
 - a. The average lighting levels do not appear to meet City of Scottsdale's requirements.
 - b. The 13,500 initial lumens are used for a 200' spacing on major arterials. Since the poles are spaced 250' apart, the initial lumen level should be higher. Please update accordingly. Please reference the City of Scottsdale DSPM at:
<https://www.scottsdaleaz.gov/Assets/ScottsdaleAZ/Design/DSPM/DSPM+2018.pdf>.
If you have any questions, please contact Paul Mood at 480-348-3573 or pmood@paradisevalleyaz.gov.

Thank you,



8767 E. Via de Ventura
Suite 200
Scottsdale, AZ 85258

Terese LoPresti
Project Manager



Celebrating 20 Years

Link with us.



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Roadway Lighting

M-400A Powr/Door™ with Cutoff Optics (MDCA & MDCL)



imagination at work

Product Features

From HID to LED, GE continues to push Roadway Lighting to new heights. Recognized for the highest quality and reliability in street, highway, parkway, and commercial applications, GE offers a wide selection of styles to meet the lighting needs of municipalities, utilities, DOT customers and more.

Applications

- For street, highway or parking lot lighting

Housing

- Die-cast aluminum housing.
- External paddle type stainless steel bail latch

Finish

- Polyester powder gray paint finish

Ratings

-  /  listed unit available

Mounting

- Universal two or four-bolt slipfitter
- 2 in. pipe mounting only with MDRA

Reflectors

- Standardized reflector
- ALGLAS™ finish on reflector

Unique Features

- Plug-in ignitor standard
- Minimum start -30°F
- Filtered optics
- Lamp included
- “Dead back” tunnel type FRP terminal board
- No-tool PE receptacle
- True 90° cutoff – no light above 90° (meets RP8-2000 for full cutoff) with flat glass
- Powr/Module ballast assembly

Ordering Number Logic

M-400A Powr/Door™ with Cutoff Optics (MDCA & MDCL)



2

PROD. ID	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE SELECTION	PE FUNCTION	IGNITOR MOUNTING	LENS TYPE	IES DISTRIBUTION TYPE	FILTER	OPTIONS
MDCA = M-400A with Cutoff* Optics 4-Bolt Slipfitter	10 = 100 15 = 150 (55V) 17 = 175 20 = 200 24 = 250/400 25 = 250 31 = 310 32 = 320 35 = 350 40 = 400	E = Energy Act Compliant Pulse MH (EPMH) S = HPS P = PMH Standard: Lamp not included.	60Hz 0 = 120/208/240/ 277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 7 = 120X240 8 = 240V Ballast 120V PE Receptacle not reconnectable D = 347 F = 120X347 T = 220 W = 230 50Hz 6 = 220 R = 230 Y = 240 NOTE: Dual voltage connected for lower voltage	See Ballast Selection Table A = Autoreg H = HPF Reactor or Lag M = Mag-Reg N = NPF Reactor or Lag P = CWI with Grounded Socket Shell	1 = None 2 = PE Receptacle NOTE: Receptacle connected same voltage as unit except as noted. Order PE Control separately.	2 = Plug-in base and Ignitor	A = Acrylic Clear Globe (250 watt Maximum) F = Flat Glass* G = Shallow Glass Globe L = Polycarbonate Clear Globe (250 watt) HPS only * = Previously IESNA Full Cutoff Optics	See Photometric Selection Table S = Short M = Medium C = Cutoff* 1 = Type I 2 = Type II 3 = Type III * = Previously IESNA Full Cutoff Optics	1 = Fiber gasket 2 = Charcoal with elastomer gasket	F = Fusing (Not available with multivolt or dual voltage) J = Line Surge Protector, Expulsion Type (UL not available) N = Meets proposed ANSI C136.31 requirements for Bridge and Underpass Vibration U = UL listed glass lens (60Hz only)

Ballast Selection Table

		Ballast Type/Voltage 60Hz											Ballast Type/Voltage 50Hz		
Wattage	Light Source	Multivolt	120	208	240	277	480	120X240	347**	240/120	220	230	220	230	240
150 (55V)	HPS	H,N,A	G,H,M,N	G,M	G,M	G,M	G,M	G,H,M,N	G*,H,M*,N	G,M	N/A	N/A	N/A	N/A	N/A
200	HPS	A,M,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,M,P	A,G,M	A,G,M,P	N/A	A,G,H,M,N	N/A	H	N/A	N/A	N/A
250	HPS	A,M,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,M,P	A,G,M,P	A,M,P	A,M,P	A,G,H,M,N	A,H	H	A,H,M,N	H	M
250/400	HPS	A	A	A	A	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
310	HPS	A,M	A,G,M	A,G,H,M,N	A,G,H,M,N	A,G,M	A,G,M	A,G,M	N/A	A,G,H,M,N	N/A	H	N/A	N/A	N/A
400	HPS	A,M	A,G,M	A,G,H,M,N	A,G,H,M,N	A,G,M	A,G,M	A,G,M	A,G,M	A,G,H,M,N	H,A,N	H	A,H,M,N	N/A	A,H,M
175	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
250	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
320	EPMH	A	A	A	A	A	N/A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
350	EPMH	A	A	A	A	A	N/A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
400	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A

NOTE: N/A = Not available. *Not available in 120 X 347. C/F = Contact Manufacturer

Photometric Selection Table

CLEAR REFRACTORS.

All light sources are clear.

		IES Distribution Type Photometric Curve Number 35-							
		Flat Glass "F"			Sag Glass "G"			Polycarbonate	
Wattage	Light Source	MC2	MC3	MC1	SC2	SC3	MC2	MC3	
150 (55V)	HPS	450386	450387	N/A	N/A	N/A	450547	450546	C/F
200-400	HPS	451001	451002	N/A	450101	450102	451003	451004	451045** MC3
175, 250, 320,	EPMH	450343	450342	N/A	N/A	N/A	450544	450545	C/F
350, 400	EPMH	452880*	452882*	450281	N/A	N/A	450280	N/A	N/A

NOTE: N/A = Not Available C/F = Contact Manufacturer PMH—Contact Manufacturer *Requires the use of ED-28 Lamp **250 watts maximum

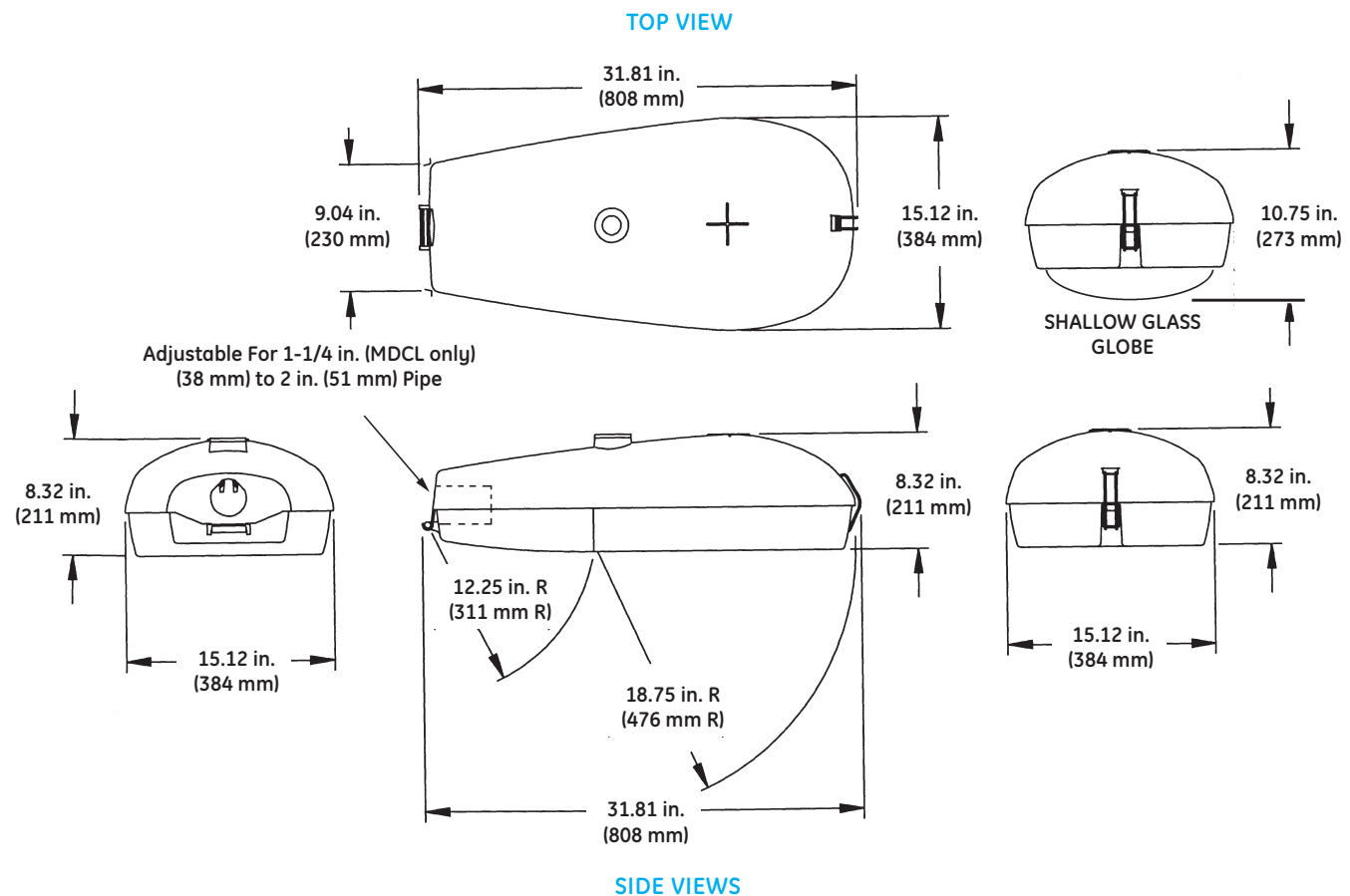
MDCA – Suggested Catalog Ordering Numbers

Catalog Number	Wattage	Light Source	Voltage (60 Hz)	Ballast Type	Refractor Type	Photometric Distribution
MDCA25S0A22FMC21	250	HPS	Multivolt	Auto-Regulator	Glass	MC2
MDCA40S0A22FMC31	400	HPS	Multivolt	Auto-Regulator	Glass	MC3

All GE suggested catalog ordering numbers come with PE receptacle. PE control must be ordered separately. Order and install SCCL-PECTL if no PE is desired.

Multivolt ballasts can be for either 120, 208, 240, or 277 volt incoming power supply.

Product Dimensions



DATA

- Approximate Net Weight: 33-39 lbs (15-19 kgs)
- Effective Projected Area: 1.1 sq. ft. max. (0.1 sq. M max.)
- Suggested Mounting Height: 30-50 ft. (9-15 M)



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1-888-69-43-533

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